REMARKS

The abstract and specification have been amended in order to correct grammatical and idiomatic errors contained therein. No new matter has been added.

In response to the objection of the drawings, Claims 1-11 have been canceled. It is respectfully submitted that the objection to the drawings no longer applies.

Claim 19 has been amended in order to respond to the Examiner's rejection under 35 USC 112, second paragraph. It is respectfully submitted that this rejection is no longer applicable.

In order to expedite the prosecution of the present application, Claims 1-12 have been canceled and replaced by newly presented Claims 21 and 22 which more particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The dependent claims originally depending on Claim 12 have been amended to depend on newly presented Claim 21. No new matter has been added. It is respectfully submitted that the presently claimed invention is patentably distinguishable over the prior art cited by the Examiner.

The presently claimed invention, in its broadest form, is directed to a computer comprising a main unit provided with a CPU, a display unit, a connection part for foldably connecting the main unit of the CPU and the display unit, and a self-excited oscillation heat pipe which reciprocatingly passes a plurality of times between the main unit and the display unit at the connection part and plural portions of the self-excited oscillation heat pipe reciprocating at the connection part are flexible. The presently claimed invention is based on the discovery that by providing a plurality of portions of a self-excited oscillation heat pipe which reciprocates through a connection part flexible, the self-excited oscillation heat pipe is capable of achieving a high radiation effect with a

simple structure when applied to electronic equipment which can be deployed, i.e., variable in distance or foldable.

Additionally, the self-excited oscillation heat pipe can be simplified in its internal structure and the deformation of a conduit making up the heat pipe and attachment of a bellows hardly effects the operation of the work fluid making it possible to deploy a flexible structure to the heat pipe without deteriorating its heat exchange performance. This heat pipe can be formed into a small pipe and can be machined in a coil shape having a small radius of curvature or waved shape. Since the self-excited oscillation heat pipe drives a working fluid by pressure oscillation generated itself-excitedly therein, it does not need electric power, such as a pump, to function and it can drive a working fluid against gravity and, therefore, there is no limitation regarding the heat radiation part being positioned sufficiently higher than the heat source part, such as a thermo-siphon which depends on the effect of gravity. It is respectfully submitted that the prior art cited by the Examiner does not disclose the presently claimed invention.

The Kobayashi et al reference discloses a heat spreading configuration used in an information processing apparatus having a liquid crystal display panel which uses a whole area of the heat spreading board by assembling a thermo-siphon to the heat spreading board and then conducting the heat from a CPU, which is a heat generation unit, from the heat pipe to the thermo-siphon. This reference discloses one end of the circulation pipe reciprocating a plurality of times only at the display part of the information processing apparatus and reciprocates only one time relative to the thermo-siphon of the main unit side and the connection part is flexible in that it can be formed in a coil shape.

Kobayashi has no disclosure with respect to a self-excited oscillation heat pipe which passes reciprocatingly a plurality of times between the main unit and the display unit via flexible portions provided at a connection part. The

invention described in Kobayashi is a loop type thermo-siphon which reciprocates only at the display part and, as a result, the heat transfer rate thereof is low. Additionally, since the heat radiation part provided at the display part can only operate at a position sufficiently higher than the heat source part, it does not achieve the heat exchange advantages associated with the present invention. Therefore, it is respectfully submitted that the presently claimed invention clearly is distinguishable thereover.

The Smyrnov reference discloses heat pipes having two phase heat-carrying fluids. Although this reference discloses that a part of a heat pipe can be formed of a flexible material and a branched part of the heat pipe can be formed in a bellows shape, this reference does not disclose a computer having a first and second member deployably connected to each other through a connection part and a self-excited oscillation heat pipe which reciprocates a plurality of times between a heat source part of the first member side and a radiation part of the second member side through the connection part and having a flexible structure at the connection part. In this reference, the bellows portion is provided at a portion other than in a circulation pass. Therefore, it is respectfully submitted that this reference has no structure which corresponds to the structure of the presently claimed invention. As such, it is respectfully submitted that the presently claimed invention clearly is patentably distinguishable thereover.

The Sauciuc et al reference discloses a laptop computer assembly in which a flexible connector 44 reciprocates one time between an evaporator 48 at the display side and a vapor chamber 40 at the main unit side. However, this reference does not disclose the provision of a self-excited oscillation heat pipe which reciprocates a plurality of times through a connection part. Therefore, like the previously discussed references, this reference does not disclose the presently

claimed invention or suggest the advantages associated with the structure of the presently claimed invention.

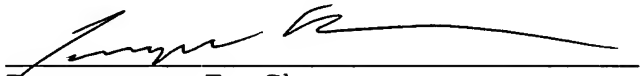
In the present invention, first and second members are provided which are deployable with respect to each other and a self-excited oscillation heat pipe is provided in a manner that it reciprocates a plurality of times between a heat source part of the first member side and a radiation part of the second member side through a connection part and a plurality of portions of the self-excited oscillation heat pipe reciprocating through the connection part are flexible. These features are not shown in any of the references cited by the Examiner and, as such, it is respectfully submitted that the presently claimed is patentably distinguishable thereover.

Claim 18 is even further distinguished over the prior art cited by the Examiner in that in a heat transport loop, such as a thermo-siphon or a pump liquid loop, water is usually used as the working fluid. In this situation, a non-metallic tube, such as Teflon, can be used as a flexible tube because it does not create a problem of transmitting the working fluid through the tube wall because water has a low vapor pressure. However, water has a low thermal performance when used in a self-excited oscillation heat pipe because the working fluid is driven by the vapor pressure oscillation and the water vapor pressure is too low to generate sufficient pressure oscillation. As such, working fluids having a high vapor pressure, such as a chlorofluorocarbon, are used in self-excited oscillation heat pipes. In this instance, a non-metallic tube such as Teflon cannot be used because the working fluid would permeate through the tube wall and be lost. Therefore, it is necessary for a self-excited oscillation heat pipe to use a metal tube to have a good thermal performance and to prevent the loss of a working fluid. This problem is peculiar to self-excited oscillation heat pipes and not in general. Products of a super-elastic metal alloy or super-elastic plastic metal alloy are limited to specific fields, such as a frame of glasses, and a product

of a fine tube has not recently been available due to the difficulty in machining the stock. Therefore, before the present invention, the possibility of using a super-elastic metal alloy or a super-elastic plastic metal alloy in applications involving self-excited oscillation heat pipes was not contemplated by practitioners in the art. Therefore, this claim is further distinguishable over the prior art cited by the Examiner.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,



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